

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2003		2. REPORT TYPE		3. DATES COVERED 00-00-2003 to 00-00-2003	
4. TITLE AND SUBTITLE Space 'key enabler' for Army Transformation				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Army Space & Missile Defense Command, Army Forces Strategic Command, Redstone Arsenal, AL, 35809				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Space “key enabler” for Army Transformation



LTG Joseph M. Cosumano Jr., Commanding General, United States Army Space & Missile Defense Command/Commanding General United States Army Space Command.

Before the war in Afghanistan, that area was low on the list of major planning contingencies. Yet, in a very short time, we had to operate across the length and breadth of that remote nation, using every branch of the Armed Forces. We must prepare for more such deployments by developing assets such as advanced remote sensing, long-range precision strike capabilities, and transformed maneuver and expeditionary forces. This broad portfolio of military capabilities must also include the ability to defend the homeland, conduct information operations, ensure U.S. access to distant theaters, and protect critical U.S. infrastructure and assets in outer Space.

— National Security Strategy, Sep 2002

By LTG Joseph M. Cosumano Jr.

The Army is and will remain the largest user among the Services of Space-based capabilities. The Interim and Legacy forces already leverage overhead constellations of military and civilian Space platforms for intelligence, communications, attack warning, weather and position, timing, and navigation. The Objective Force will exploit the full potential of these systems. Operational simultaneity, situational understanding, precise and tactically responsive intelligence, surveillance and reconnaissance, and assured communications are implicit in the Objective Force Operational Concept, and will depend on successful mid- and far-term development of overhead architectures, systems and platforms. The Objective Force will also rely heavily on the Joint Force's ability to assure our access to Space resources while denying them to the enemy.

Space Enables Transformation

Successful transformation to the Objective Force is key to the Army's battlefield dominance in the 21st century and to providing the most efficient, lethal land forces to the Joint Force Commander. Space is the Army's key enabler for supporting those forces in any theater.

The contributions that Space systems already make in the near term will be continuously improved as the Army transforms. Army Space equities are primarily represented in two of the four Space mission areas: force enhancement

and Space control. Capabilities in these two areas, supported by the ground- and Space-based infrastructure of relays, ground stations and satellite control facilities, directly support the transformation of our Army to the Objective Force and enable Army operations in all phases of conflict in support of the Joint Force Commander.

Space and the Objective Force

Force enhancement embodies the Warfighter's use of Space. It provides “value-added” to battlefield functions, enabling the land force to accomplish its terrestrial mission. As the Objective Force matures, the Army will ensure that upgrades to force enhancement capabilities address Objective Force requirements. Such capabilities include beyond-line-of-sight satellite communications; intelligence, surveillance and reconnaissance (ISR); position, navigation and timing; weather, terrain, and environmental monitoring; and missile warning.

Commanders require Space-based communications and intelligence capabilities as they move from CONUS installations to a theater of operations. Arrival in theater only increases the Joint Warfighter's reliance on Space to facilitate reachback for strategic command and control, logistics support, database query, precision strike support and ISR support for efficient use of in-theater Reconnaissance, Intelligence, Surveillance, and Target Acquisition and deep

Force enhancement embodies the Warfighter's use of Space. It provides "value-added" to battlefield functions, enabling the land force to accomplish its terrestrial mission. As the Objective Force matures, the Army will ensure that upgrades to force enhancement capabilities address Objective Force requirements.

operations assets, among other things.

The Objective Force will comprise lighter but highly lethal, mobile and survivable formations that will arrive in an area of operations ready to fight and fully synchronized with other elements of the Joint Force. Objective Force operations will require superior situational understanding and a common operational picture to focus forces against critical enemy capabilities, real-time imagery to detect and locate identified decisive points, the real-time targeting data necessary for attack, and responsive long haul communications for effective command and control. The physical range and field-of-view limitations of surface-based command, control, communications and computer intelligence, surveillance and reconnaissance systems mean that the Objective Force will rely on enhanced mid- to far-term capabilities provided by Space and overhead platforms.

Pre-deployed and organic Space assets will also lighten the load of deploying forces by allowing many of the traditional planning and logistical tasks of main and rear command posts to be accomplished from home station. As forces deploy, Space systems integrated with computer network operations and Space negation capabilities will provide complete real-time battlespace awareness, assured global communications, en route mission planning and rehearsal capabilities, and assist in countering adversary anti-access strategies.

Today and in the near term, global position, navigation and timing capabilities provided by the Global Positioning System (GPS) represent our sole method of providing force-wide common location and timing essential for simultaneous, distributed operations (knowing where you are, where your buddy is and where the adversary is). GPS provides the "common grid" for precision engagement and, through systems such as Grenadier BRAT and its follow-on, linked to the maneuver force via the Blue Force Tracking Mission Management Center, it enables effective beyond-line-of-sight blue force tracking of friendly land forces. However, as GPS technology proliferates, so will the ability to interfere with or disrupt the signal and receivers. Mid- and far-term upgrades of the GPS and blue force tracking systems must

include anti-jam and anti-spoof modes to safeguard this capability.

The Defense Support Program satellites today, and the mid-term fielding of the Space-Based Infra-Red System, provide critical, time-sensitive early warning of missile attack. Launch detection data provided by these satellites allows the in-theater Joint Tactical Ground Station and its follow-on, the Mobile Multi-Mission Processor, to calculate missile launch points, trajectories and predicted impact points and times, and selectively warn potentially affected units and areas. In the far term, the Space-Based Radar will provide moving target indications from Space to track adversary vehicles, which when combined with highly accurate digital terrain elevation data will support precision attack of critical targets and nodes. Direct downlink will make timely, assured receipt of this and other information available to the tactical commander where and when he needs it.

As the Army grows more reliant on force enhancement capabilities, our vulnerability also increases. Rapid growth in commercial and international Space capabilities increases potential adversaries' ability to monitor U.S. forces and potentially negate U.S. advantages in Space. Space control takes on increased significance for land forces by ensuring dominant access to Space capabilities. Space control — whether accomplished through hardening of our own assets, direct attack of enemy Space capabilities by kinetic or directed energy weapons, electronic disruption or denial of his use of Space systems, or by other means — is how Space superiority will be gained and maintained ensuring friendly forces the use of Space while denying it to the enemy.

Space operations and capabilities are inextricably linked with and dependent upon supporting infrastructure. The maintenance and upgrade of Space infrastructure includes improvements to fixed site facilities such as permanent satellite communications ground stations, the Blue Force Tracking Mission Management Center and the Regional Satellite Support Centers. This infrastructure also supports the Space control mission areas of negation, surveillance, (See Key Enabler, page 44)

Key Enabler ... from Page 3

protection and prevention and ensures the capability to control Space while denying its use to the enemy.

Decisive operations in support of the Joint Force Commander depend on tactical success in close combat — the ability of the Objective Force to close with and destroy enemy forces and to seize and control terrain. Robust Space-based capabilities, integrated with a seamless command, control, communications and computer intelligence, surveillance and reconnaissance structure, are key to this phase of the operation. National technical means, coupled with tactical surveillance, theater reconnaissance and wide area surveillance, will in the mid- to far-term enable the Objective Forces commander to see the enemy first, understand his intent, plan a response, distribute the appropriate data and information, and then attack.

The potential for future adversaries to exploit urban and complex terrain require the Objective Force to see, know and act

effectively throughout this environment as well. The Space-enhanced Objective Force will achieve rapid decision while discriminating between friend, foe and non-combatants and avoiding collateral damage. Essential near- through far-term force enhancement Space capabilities will include beyond-line-of-sight communications, discrete imaging and targeting data, and continuous GPS coverage for force positioning, navigation and timing.

The countless command and control linkages and situation awareness demands fundamental to a ground maneuver force's tactical mission makes the Army the largest military service user of Space-related force enhancement capabilities. Legacy forces and emerging Interim forces already leverage overhead constellations of military, civil and commercial Space systems for intelligence, communications, early warning, positioning, weather and terrain information and support today. And they will make even

greater use of such capabilities as the Army's Transformation continues. The Objective Force will not only exploit the potential of planned and programmed Space systems, but its requirements will help shape the design of future systems and the architectures that deliver their Services. Space capabilities will play an increasingly key part in the operational simultaneity, situational understanding, precise and tactically responsive intelligence, surveillance and reconnaissance, and assured communications implicit in the Objective Force Operational Concept. The articles in this issue focus on our Space-related capabilities as we prepare ourselves for the fielding of the Objective Force and what Space will do for the Army. Future Journals will discuss modernization requirements and what the Army should do for Space. I encourage you to study the articles and share this information with those you support.

Secure the High Ground!